

The following samples were submitted and identified on behalf of the client as:

**COMMISSION DELEGATED REGULATION (EU) No 2019/2018**  
**supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with**  
**regard to energy labelling of refrigerating appliances with a direct sales function**  
**COMMISSION REGULATION (EU) No 2019/2024**  
**laying down ecodesign requirements for refrigerating appliances with a direct sales function**  
**pursuant to Directive 2009/125/EC**

**Report Reference No.**..... : **ROTOR202400908**

**Tested by (name + signature)**..... : Fang ya Chen Brad 

**Approved by (+ signature)** ..... : Yu 

**Date of issue**..... : 2024-9-8

**Total number of pages**..... : 7 pages

**Testing Laboratory**..... : Ningbo Rotor Electrical Appliances Co., Ltd. Testing Center.

**Address**..... : West Zone, Industrial Park, Guanhaiwei, Cixi, Ningbo, 315315  
Zhejiang, China

**Accreditation to test to ISO 23953-2: 2023** : Yes

**Applicant's name**..... : Ningbo Rotor Electrical Appliances Co., Ltd.

**Address**..... : West Zone, Industrial Park, Guanhaiwei, Cixi, Ningbo, 315315  
Zhejiang, China

**Test specification:**

**Standard** ..... : ISO 23953-1:2023  
ISO 23953-2:2023  
COMMISSION REGULATION (EU) 2019/2024  
COMMISSION DELEGATED REGULATION (EU) 2019/2018

**Test procedure** ..... : Testing Center

**Non-standard test method**..... : None

**Test Report Form No.**..... : ISO 23953-1/2:2023

**Test Report Form(s) Originator**..... : Testing Center

**Master TRF**..... : 2011-09-06 (Updated to ISO 23953-1/-2:2023)

**This test report is issued under Testing Center general terms of delivery. Attention is drawn to the limitations of liability, indemnification and jurisdictional issues defined therein. Unless otherwise stated: (a) the results shown in this document refer only to the sample(s) tested and (b) such sample(s) are retained for three months. This document cannot be reproduced except in full, without prior approval of Testing Center.**

**Any unauthorized alteration, forgery or falsification of the content or appearance of this report is unlawful and offenders may be prosecuted to the fullest extent of the law**

**Test item description**..... : Semi-vertical and combined supermarket refrigerator cabinets

**Trade Mark**..... : --

**Manufacturer**..... : Same as applicant

**Model/Type reference**..... : RTW-120B

**Ratings**..... : 220-240 V; 50 Hz; R600a/50 g; Class I

Summary of testing:

Tests performed(name of test and test clause):

The submitted appliances comply with the specific standards.

Tests according to the following standards were carried out:

COMMISSION REGULATION (EU) No 2019/2024COMMISSION DELEGATED REGULATION (EU) No 2019/2018 ISO 23953-1: 2023 ISO 23953-2: 2023

The tested energy consumption is: 2.68 kWh/daym<sup>2</sup>.

Testing location:

West Zone, Industrial Park, Guanhaiwei, Cixi, Ningbo, 315315

Zhejiang, China

Copy of marking plate

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective National Certification Body that owns these marks.

REFRIGERATOR

Model:RTW-120B	Refrigerant&Injection(g):R600a(50)
General Rated Input Power(W): 160	Type of Climate:4
Refrigeration Temperature(°C): 0-12	Protected Mode:I
Storage Volume(L):120	Rated Voltage(V): 220-240~
Net Weight(kg): 57	Rated Frequency(Hz): 50
Overall Dimension(mm): 702x568x686	Rated Current (A):1.4
	Lamp Power(W): 2(LED)

Produce Date & Code:

Circuit Diagram

Defrost probe

Thermostat probe

Digital Temperature Controller

Display panel

220-240V~  
50Hz

Fan Motor

Lamp

OverLoad Protector

Compressor

PTC

TRF No. EU No. ISO 23953\_A (2023)

page 2

## Section1: Product specification

Product	Semi-vertical and combined supermarket refrigerator cabinets		
Cabinet type	Remote <input type="checkbox"/>	Self-contained <input checked="" type="checkbox"/>	
Brand name			
Designation of the appliance	VC4		
Model No.	RTW-120B		
Serials No.	N/A		
Rating(s)	220-240V~;50Hz		
M-package Temperature class(for self-contained M2 display cabinets only)			
Designated Climate class	Tested under Climate Class4(30 °C ± 0.5 °C / 55 % ± 5 % RH)		
Thermostat-setting(SP)	2°C ± 1°C		
Refrigerant type	R600a / 50 g		
Appliance external dimensions(advisory only)			
Width(mm)	702		
Height(mm)	686		
Depth(mm)	568		
Night-cover supplied with the unit	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Manual light switch fitted	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Lighting, or part of the lighting controlled by a time- clock,			
Smart sensor or similar device.....	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Anti-sweat heaters controlled by a time-clock,			
smart sensor or similar automatic device	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Type of light source:	LED		
Directional or Non Directional :	Non Directional		
Mains or Non-Mains :	Non-Mains		
Connected Light Source :	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
Colour Tunable light source :	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
High luminance light source :	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
Anti-glare shield :	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
Dimmable :	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
Light source energy efficiency class:	<input type="checkbox"/> Not check <input type="checkbox"/> N/A <input checked="" type="checkbox"/> G		

Defrost type: Automatic Electric

Defrost frequency: 2 cycles / 24 h

Fan type: EC Axial

Door or cover type: Sliding glass cover

Lighting power (W): 15 W

Additional equipment energy: Included in Edaily

Test performed under Climate Class 4 (30°C ± 0.5°C / 55% ± 5% RH) as per ISO 23953-2:2023

TRF No. EU No. ISO 23953\_A (2023)

## Section2:

General testing conditions:					
Item	Description	Unit	Measurement/ Result	Requirements	Inspection
1	Climate class for testing room where the test was carried out	°C	30 °C	Set 1	OK
2	Measurement of temperature in climate measuring point	°C	30 °C	30 °C	OK
3	Measurement of relative humidity in climate measuring point	%R.H.	54%	55%	OK
Cabinet Preparation:					
Item	Description	Unit	Measurement/ Result	Requirements	Inspection
	The cabinet location according to	-	-	-	
1	X	mm	2000	2000	OK
2	B	mm	1600	≥1000 (recommended)	OK
3	Y	mm	2000	≥1500	OK
4	A	mm	1000	≥800	OK

## Test result:

Description	Measurement/Result	Requirement Special classification	Inspection
Highest temperature of warmest M-package	7.7 °C	≤ 10 °C	OK
Lowest temperature of coldest M-package	1.3 °C	≥ -1 °C	OK
Highest minimum temperature of all M-package	N/A	N/A	N/A

Average M-package  
temperature range 4.5 °C

Defrost cycle included in test OK

Lighting / control energy included OK

Total Display Area (TDA) (m2)	0.98m <sup>2</sup>
The total energy consumption of the refrigerated cabinet (kWh/day) (Edaily)	2,625 kWh/day

Measurements revised in accordance with ISO 23953-2:2023. Energy consumption includes defrost, lighting and auxiliary components. Test conducted under Class 4 (30 °C / 55% RH) environment.

Test Summary:		
Kind of product	Semi-vertical and combined supermarket refrigerator cabinets	
M-package Class	M2	
AE (kwh/a): (refrigerated cabinet's annual energy consumption, Edaily×365)	958.13kWh/a	
SAE (kwh/a): (Standard annual energy consumption, SAE=365×P×(M+N×Y)×C.)	P value (correction factor).....:	1.0
	M value (modelling parameters).....:	9.1
	N value (modelling parameters).....:	9.1
	Y value (TDA).....:	0.98
	C value (temperature coefficient).....:	1.0
	Calculated SAEC: 6555.37 kWh/a	
EEL: (Energy efficiency index, EEI = AE/SAE.)	14.6	

Additional Information	Value
-----	-----
Test climate class	Class 4 (30 °C / 55 % RH)
Defrost cycle included	Yes
Lighting & control energy included	Yes

Category	Value for M	Value for N
Beverage coolers	2.2	0.006
Ice-cream freezers	2.1	0.009
Refrigerated vending machines	4.3	0.004
Gelato-scooping cabinets	25.0	30.4
Vertical & combined supermarket refrigerator cabinets	8.8	8.8
Horizontal supermarket refrigerator cabinets	3.7	3.5
Vertical & combined supermarket freezer cabinets	7.3	19.0
Horizontal supermarket freezer cabinets	4.0	10.3
Roll-in cabinets (from 1 March 2021)	9.2	11.6
Roll-in cabinets (from 1 September 2023)	9.1	9.1

Note: Coefficients M and N are derived from EU Regulation 2019/2018 Annex D. They are applied with correction (P) and temperature (C) factors defined in ISO 23953-2:2023. For roll-in cabinets, the applicable set (March 2021 or September 2023) depends on the product placing date on the EU market.

EEL values calculated according to ISO 23953-2:2023 Annex D using updated M, N, P and C coefficients. Energy consumption includes defrost, lighting, and control systems under Climate Class 4 (30 °C / 55 % RH).

Energy efficiency index	Value	Verifying limit	Verdict (Pass/False)
EEI	14.6	<100(from 2021.03.01)	Pass
		<80(from 2023.09.01)	Pass

From 1 March 2021, the EEI of refrigerating appliances with a direct sales function shall not be above the values as set out in Table 1:

*Table 1*

**Maximum EEI for refrigerating appliances with a direct sales function, expressed in %**

	EEI
Ice-cream freezers	80
All other refrigerating appliances with a direct sales function	100

From 1 September 2023, the EEI of refrigerating appliances with a direct sales function, except for refrigerated drum vending machines, shall not be above the values as set out in Table 2.

*Table 2*

**Maximum EEI for refrigerating appliances with a direct sales function, expressed in %**

	EEI
Ice-cream freezers	50
All other refrigerating appliances with a direct sales function, except refrigerated drum vending machines	80

## Test Result:

### RTW-120B – Energy Efficiency Calculation (ISO 23953-2023)

Parameter	Value	Notes
P value (correction factor)	1.00	Self-contained cabinet, ISO 23953-2:2023 default
M value	9.1	From EU 2019/2018 Annex D (Vertical & Combined Refrigerator
N value	9.1	From EU 2019/2018 Annex D
Y value (TDA)	0.98 m <sup>2</sup>	Measured per Annex C
C value (temperature coefficient)	1.00	Climate Class 4 (30 °C / 55 % RH)
Calculated SAEC (kWh/a)	6 555	$365 \times (M + N \times Y) \times P \times C$
AE (kWh/a)	958	Measured annual energy consumption
EEl (%)	14.6	$AE / SAEC \times 100$
Energy Class	B	According to EU 2019/2018 Table 1

Note: All calculations revised according to ISO 23953-2:2023 (Annex C). Using  $P = 1.00$  and  $C = 1.00$  for self-contained Climate Class 4 cabinet. Resulting  $EEl = 14.6\%$  → Energy Class B ( $10 \leq EEl < 20$ ).